DOCUMENT RESUME

ED 371 188 CE 066 668

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TITLE Developing a High Performance Work Force--MAPI Survey of Selected Manufacturing Companies' Training Programs. MAPI Economic Report ER-278.
INSTITUTION Manufacturers' Alliance for Productivity and Innovation, Washington, DC.
PUB DATE Aug 93
NOTE 13p.
PUB TYPE Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Adult Education; Corporate Education; Employer Attitudes; *Industrial Training; Inplant Programs; *Job Training; *Labor Force Development; Manufacturing; *Manufacturing Industry; Staff Development; Surveys; Trade and Industrial Education

ABSTRACT

The Manufacturers' Alliance for Productivity and Innovation surveyed the members of its two Human Resources Councils to obtain feedback on the training employers provide their employees. The survey inquired about features of company training initiatives, special training programs that arose from a specific training need that had been instituted, and ongoing company-sponsored training programs. Responses from 72 employers revealed that a sizable majority of respondents were strongly committed to increasing the skill levels of their work forces as a way of improving their competitiveness position. As measured both in terms of dollars spent as a percent of payroll and the percent of employee hours devoted to training activities, companies committed substantial resources to training. A cause for concern was that a high proportion of training dollars were spent on employees who already had high levels of formal education. Only 36 percent of respondents spent over one-half of their training resources for nonsupervisory production and clerical workers. Comments indicated the training process was increasing being integrated into the manufacturing process rather than serving as a stand-alone activity. (A summary of data responses to the survey questionnaire on company training programs is included.) (YLB)

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ED 371 188

MAPI Economic Report

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ER-278 August 1993

DEVELOPING A HIGH PERFORMANCE WORK FORCE

—MAPI Survey of Selected Manufacturing Companies' Training Programs

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MAPI (Manufacturers' Alliance for Productivity and Innovation) promotes the technological and economic progress of the United States through studies and seminars on changing economic, legal, and regulatory conditions affecting industry.

Developing a High Performance Work Force
—MAPI Survey of Selected Manufacturing Companies' Training Programs

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Single copies of ***Developing a High Performance Work Force —MAPI Survey of Selected Manufacturing Companies' Training Programs*** (ER-278) are being distributed without charge to survey participants. Copies of ER-278 are available at $10.00 each to all purchasers.

Developing a High Performance Work Force

MAPI Survey of Selected Manufacturing Companies' Training Programs

Introduction

President William J. Clinton and Secretary of Labor Robert B. Reich have spoken of the need to enhance the education and skills of U.S. workers to enable them to obtain (or retain) meaningful, well-paying jobs—so called "good jobs." Further, Secretary Reich has stated that U.S. manufacturing companies can remain competitive in the world economy and concurrently create (rather than eliminate) those "good jobs" only if they make the transition from being high-volume producers using mostly lower skilled workers to being high-value producers using a highly skilled work force. The need to improve the skills of various segments of the labor force is an integral part of the Administration's call for employers to contribute to the development of a "high performance work force" in which highly skilled labor is integrated into a system of advanced technologies.

From the Administration's perspective, U.S. companies, if they are to become predominately high-value producers, need to provide more training to their employees. Initially, the Administration proposed a rather simplistic method for increasing company-provided training—that companies be required to spend on training a minimum percentage of their payroll. It now appears that the Administration has doubts about the efficacy of this type of mandate and is attempting instead to develop other government initiatives that would expand the training opportunities available to U.S. workers.

As a first step in that process, the Administration has asked employers to provide it with feedback on the training they currently provide their employees. In response to this request for information, MAPI recently surveyed the members of its two Human Resources Councils. The survey contained a number of questions about company training initiatives, including how much companies were spending on training as a percentage of payroll, what percentage of total employee work hours was devoted to training, and what technical/junior college courses were likely to be required for new hires who do not have a bachelor's degree. In addition, the survey inquired whether any special training programs that arose from a specific company need had been instituted and posed a number of questions concerning the relationship between training and employee involvement. The survey also sought information about ongoing company-sponsored training programs, such as whether they were offered on company-paid time or on the employee's own time, whether they were available only to supervisory or professional employees, and the cost of the program per participant.

Manufacturing companies are aware of the link between a well-trained work force and producing a competitive product. And, as indicated by the survey results, this awareness and their significant commitment to building a "high-performance work force" are reflected in industry's spending on training and related activities. Over one-half of the responding companies spent between 1 percent and 2 percent of their payroll for training their U.S. work force during the most recent fiscal year and close to one-third of the responding companies spent a greater amount. While the question was not asked in the survey, respondent companies volunteered comments that the government should not play a role in setting even minimum levels of training that a company must perform. As one survey respondent noted, any approach that involved government-imposed mandates would be more likely to lead to increased costs rather than to increased training.

> *Government intervention is not needed nor desired. At best it would foster an inefficient, bloated bureaucracy. At worst, it could seriously misdirect corporate resources and damage our competitive position. Each company's reactions to the market place should determine what's spent on training, not some arbitrary government mandate.*
>
> *Survey Respondent*

The next section presents highlights of the survey. Detailed survey results and additional selected respondent comments follow in separate sections.

Survey Highlights

Company Background Information

Apart from establishing the size of the companies responding (by two measures—sales revenues and number of U.S. employees), the questions in Section A of the survey (pages 5-6 of this report) elicited general information about each respondent company as to its annual payroll for U.S. employees, the percentage of its employees who are nonsupervisory production or clerical workers, the percentage

of its employees who have not completed high school, and the percentage of its jobs that require at least a bachelor's degree. The total number of respondents to the questionnaire was 72, although not all respondents answered all questions:

- A slight majority (51 percent) of the respondent companies have total annual sales revenues of $1 billion or greater.
- Nearly 44 percent of the companies have fewer than 5,000 U.S. employees, although 35 percent have 10,000 or more U.S. employees.
- Sixty-two percent of the respondent companies have total annual payrolls for their U.S. employees equal to $100 million or greater and less than 2 percent of the respondents have payrolls less than $10 million.
- In two-thirds of the respondent companies, nonsupervisory production or clerical workers comprise more than 50 percent of the work force, and in less than 3 percent of the respondent companies, nonsupervisory and clerical workers comprise less than 10 percent of the work force.
- Fifty-nine percent of the respondent companies indicate that fewer than 10 percent of their employees have not completed high school.

> *We are a very diversified manufacturing company that needs properly educated men and women (primarily high school graduates) who have good math and language skills.*
>
> *Survey Respondent*

- Few companies (only 11 percent) require a minimum of a bachelor's degree for 50 percent or more of their jobs. By contrast, a large proportion of the respondent companies (54 percent) require at least a bachelor's degree for fewer than 25 percent of their jobs.

> *Colleges and universities are still not really tuned in to the needs of manufacturing companies. There has been some progress made in the last couple of years, but there is still a long way to go.*
>
> *Survey Respondent*

Company Training Initiatives

The first three questions in Section B (page 6) were aimed at determining: (a) the extent to which the respondent companies were involved in training their employees by looking at their expenditures for training as a percentage of payroll; (b) the percentage of the training expenditure attributable to training nonsupervisory production or clerical workers; and (c) the percentage of total employee work hours that was devoted to training.

- Nearly one-half of the respondents (34 respondents) spent between 1 percent and 2 percent of their payroll for training their U.S. work force during the most recent fiscal year. Close to one-third of the respondents (21 respondents) spent a greater percentage.

> *Any industrial training assessment should not overlook the probability that informal on-the-job training comprises a significant portion of training effort and expense, but is often not tracked and accounted for.*
>
> *Survey Respondent*

- A small minority of the respondent companies (6 percent) spent at least 75 percent of their total training expenditures on training nonsupervisory production or clerical workers. Most companies (64 percent) spent less than 50 percent of their total training expenditures on training their nonsupervisory workers.
- In only a small minority of the companies (4 percent) was training as a percentage of total employee work hours greater than 4 percent. Alternatively, in 80 percent of the companies, training comprised less than 2 percent of total employee work hours.

The fourth question in Section B (page 7) listed 11 specific courses offered by technical/junior colleges and asked which of those the respondents would most likely require for new hires who have not obtained a bachelor's degree. In addition, respondents were asked to write in any ***other*** required courses.

- The three courses which the highest proportion of respondent companies require for their new hires who do not have a bachelor's degree are: computer science/programming, statistics, and English composition. By contrast, less than 10 of the respondents require physics, metallurgy, or calculus. In general, the "write-in" courses (for example, basic math, reading, algebra, and machine shop) were less advanced than those listed in the survey as possible required offerings by technical/junior colleges.

> *We hire promotable people into entry level positions and advance them in the organization as their performance merits. A solid background in math and communications skills (both verbal and written) is basic to this concept. Increasingly, we have had to provide more and more training in these areas over the years.*
>
> *Survey Respondent*

Question 5 in Section B (pages 7-8) presented two grids (one for new hires and one for current employees) designed to elicit information about the respondents' ongoing company-sponsored training programs. For each type of listed program, respondents were to indicate first, whether it was used, and if so, if the training was provided on the employee's own time or on company time, if the training was limited to supervisory or professional employees only, the number of employees participating, and the per participant cost of the program to the company. The types of programs listed in both grids were remedial reading and mathematics, tuition assistance, cooperative work-study or other programs with technical schools or junior colleges, and in-house training. In addition, the grid for current employees listed programs to retrain employees with obsolete or redundant skills, bachelor's degree programs, and graduate degree programs.[1]

Significant findings are as follows:

- Most companies engage in some type of in-house training of their new hires, with the training occurring most often on company-paid time (51 respondents), although some employers (6 respondents) did require at least part of the training to take place on the employee's own time. Only one employer indicated that the in-house training was done totally on noncompensated time.
- The types of training choices listed for new hires, remedial reading and mathematics, sponsorship of work-study or other programs with high schools, technical schools, or junior colleges, and sponsorship of programs with four-year colleges, were used much less often and were more likely to involve use of the employee's time rather than company-paid time.
- Sixty-one respondents noted that their companies provided tuition assistance to their current employees, with 43 respondents sponsoring bachelor's degree programs and 41 respondents sponsoring graduate programs. Although the companies provided tuition assistance, the programs themselves were generally completed on the employee's own time.
- Company sponsorship of in-house training programs done on company-paid time was very high with 50 respondents exclusively using compensated time and 9 respondents using a combination of paid and nonpaid time. Only five respondents asked employees to use their own time to complete in-house training programs.
- A majority of the respondents (44 respondents) offer remedial programs in mathematics and/or reading, with 19 respondents providing at least some company-paid time for this activity.

Question 6 (page 8) asked respondents whether they had instituted a special training program tied to a specific need that developed in their company as a result of instituting statistical process control, "just-in-time" production methods, team organization, or other programs. If a special program was instituted, respondents also were asked if employee participation was mandatory.

- Nearly all of the respondents (93 percent) instituted a special training program tied to a specific need, and in the case of 71 percent of the respondents, employee participation was mandatory.

Question 7 (pages 8-9) posed three questions concerning the relationship between training and employee involvement. The first question inquired as to the proportion of the respondent's industrial processes that are performed by employees participating in worker involvement programs. Those respondents whose workers participate in employee involvement programs then were asked to indicate whether the workers in question receive training specifically directed toward the activities they are performing in the programs. Finally, respondents were provided with a number of types of employee involvement on a continuum ranging from low- to high-intensity involvement techniques and asked to indicate where on the continuum their company's overall level of employee involvement is approximately located.

- A large majority of the respondents (74 percent) have less than 50 percent of their production work performed by employees participating in worker involvement.
- Among the 70 respondents with employees participating in employee involvement programs, 24 companies (34 percent) provide training that is specifically directed toward the activities being performed in those programs, while another 45 companies (64 percent) provide training in some of their programs.
- Nearly 70 percent of the respondents described their company's overall employee involvement programs as high intensity (i.e., other problem-solving teams, work teams, and self-managed work teams); however, only an additional 4 percent of the respondents considered their company's level of employee involvement to be at the highest level of intensity.

[1]For all of these training categories, the number of participants and the cost of the programs vary too much for averages to be meaningful; however, the ranges are included in the section titled "Summary of Data Responses to MAPI Survey Questionnaire on Company Training Programs." The summary highlights from this section refer only to the number of respondents, not to the percent of respondents because, in the case of these selections, using the total number of respondents as a denominator would not provide meaningful results.

Conclusion

The survey results reveal that a sizable majority of the respondents are strongly committed to increasing the skill levels of their work forces as a way of improving their competitiveness position. As measured both in terms of dollars spent as a percent of payroll and the percent of employee hours devoted to training activities, companies are committing substantial resources to training. This is especially remarkable at a time when manufacturing companies also are striving for cost reduction in all aspects of the production process.

Nevertheless, one area that may be cause for concern is that a high proportion of training dollars is being spent on employees who already have high levels of formal education. According to the MAPI survey, only 36 percent of the respondents spent over one-half of their training resources for nonsupervisory production and clerical workers, typically workers with less than a college degree. It is not possible to determine from the survey results whether the respondents consider the nonsupervisory production and clerical workers to be already adequately trained. One possibility is that training programs for nonsupervisory production and clerical workers are conducted on the job using in-house instructors and, therefore, are relatively less expensive than advanced training programs that are taught off-site by outside experts. On the other hand, if some companies are directing insufficient resources to training programs for their workers with a high school degree or less, it is difficult to believe that setting some arbitrary across-the-board floor of expenditure, perhaps a minimum percentage of total training expenditures for employees without a college degree, would afford companies with a wide variety of training needs the flexibility to allocate their training resources in the most efficient manner.

As comments from the survey respondents point out, the training process is being increasingly integrated into the manufacturing process itself, rather than serving as a stand-alone activity. The impact of this change is two fold. First, the efficacy of training should increase, and as the training becomes increasingly relevant to the work at hand, the learning can be immediately incorporated into the manufacturing process. With the adoption of productivity-enhancing programs, such as "continuous improvement" programs, greater recognition is being given to the importance of the circular relationship of learning the process and then adapting the process to embody the learning. The second impact of this shift is that it will make it harder to track the amount of money spent on training.

A concern is that any attempt by the government to impose preset spending levels on training would damage or reverse this important development. Rather than working out their own individualized solutions to their various situations in order to develop a high performance work force, companies could be forced to shift emphasis to meet the uniform rules imposed by government regulations.

Summary of Data Responses to MAPI Survey Questionnaire on Company Training Programs

A. Company Background Information

1. Please answer the following for your most recently completed fiscal year:

		Number	Percent*
a. Total sales revenue			
	Less than $100 mm	3	4.2
	$500 - 999 mm	17	23.9
	$500 - 999 mm	15	21.1
	$1 billion and over	36	50.7
b. Number of U.S. employees			
	Less than 500	4	5.6
	500 - 999	2	2.8
	1,000 - 4,999	25	35.2
	5,000 - 9,999	15	21.1
	10,000 and over	25	35.2
c. What was the total annual payroll (wages, salaries, commissions, and bonuses) for the U.S. employees?			
	Less than $10,000,000	1	1.4
	$10,000,000 - 99,999,999	26	36.6
	$100,000,000 - 499,999,999	27	38.0
	$500,000,000 and over	17	23.9

2. What ***percentage*** of your company's employees ***are*** nonsupervisory production or clerical workers?

	Less than 10%	1	2.8
	10 - 24%	8	11.1
	25 - 50%	14	19.4
	Greater than 50%	48	66.7

* Percent totals may not add to 100.0 because of rounding.

	Number	Percent

3. What ***percentage*** of your employees ***have not*** completed high school?

Less than 10%	39	59.1
10 - 19%	17	25.8
20 - 30%	8	12.1
Greater than 30%	2	3.0

4. What ***percentage*** of your jobs ***require*** employees to have completed at least a bachelor's degree?

1 - 24.9%	38	53.5
25 - 49.9%	25	35.2
50 - 74.9%	8	11.3
75 - 100%	0	0.0

B. Company Training Initiatives

1. For the most recent fiscal year, how much did your company spend for training its U.S. work force as a percentage of payroll?

0 - .9%	11	16.7
1 - 1.9%	34	51.5
2 - 3.9%	18	27.3
4% or greater	3	4.5

2. What percentage of that training expenditure is attributable to training nonsupervisory production or clerical workers?

0 - 24.9%	14	20.9
25 - 49.9%	29	43.3
50 - 74.9%	20	29.8
75 - 100%	4	6.0

3. What percentage of total employee work hours was devoted to training?

0 - .9%	15	21.7
1 - 1.9%	40	58.0
2 - 3.9%	10	14.5
4% or greater	4	5.8

4. Which of the following courses offered by technical/junior colleges would you most likely require for new hires who have not attained a bachelor's degree?

	Number		Number
Computer Science/Programming	35	Reading*	3
Statistics	31	Foreign Language*	1
English Composition	26	Industrial Technology*	1
Geometry/Trigonometry	19	Hydraulics*	1
Accounting	17	Team Skills*	1
Electrical Engineering	15	Writing Skills*	1
Chemistry	10	Mechanical Engineering*	1
Speech and Presentations	10	Creative Problem Solving*	1
Calculus	8	Interpersonal Skills*	1
Metallurgy	8	Algebra*	1
Physics	7	Diesel Mechanics*	1
Basic Math*	5	Machine Shop*	1

5. Ongoing Company-Sponsored Training Programs

a. New Hires

	Do Not Use Program	On Employee's Own Time**	On Company Paid Time**	For Supervisory or Professional Employees Only	Number of Employees Participating in Program	Dollar Cost of Program to Company per Participant
	number of companies					
Reading and Mathematics Remedial Program	27	24	12	0	40-100	$150-500
Sponsorship of Work-Study or Other Programs With High Schools, Technical Schools, or Junior Colleges	20	17	17	2	5-1,000	$279 per week - 5,200 per yr
Sponsorship of Programs With Four-Year Colleges	19	21	15	2	12-200	$4,000-12,400
In-House Training Programs	8	7	51	2	15-7,000	$130-5,000

* Volunteered "other" responses.

** Some companies use a combination of paid time and employee's own time for training in which case their program is included in both columns. Because of this, adding the two columns "On Employee's Own Time" and "On Company Paid Time" would overstate the number of firms using a given program.

b. Current Employees

	Do Not Use Program	On Employee's Own Time*	On Company Paid Time*	For Supervisory or Professional Employees Only	Number of Employees Participating in Program	Dollar Cost of Program to Company per Participant
	number of companies					
Reading and Mathematics Remedial Program	18	34	19	0	1-380	$100-1,000
Tuition Assistance	0	61	7	6	22-1,600	$300-8,000
Sponsorship of Cooperative Work-Study or Other Programs With Technical Schools or Junior Colleges	19	24	22	2	2-2,000	$200-13,000
In-House Training Programs	1	14	59	2	30-20,900	$125-4,000
Retraining Employees With Obsolete or Redundant Skills	19	10	31	0	12-60	$200-1,250
Bachelor's Degree Programs (on and/or off-site)	14	49	8	3	4-1,200	$500-8,500
Graduate Degree Programs (on and/or off-site)	14	48	9	6	1-900	$560-23,000

		Number	Percent
6. Special Company-Sponsored Training Programs			
a. Have you instituted a special training program tied to a specific need that developed in your company as a result of instituting statistical process control, JIT, team organization, etc.?	Yes	67	93.1
	No	5	6.9
b. If you answered yes above, was employee participation mandatory?	Yes	47	71.2
	No	16	4.6
	Yes, for some	3	24.2

* Some companies use a combination of paid time and employee's own time for training in which case their program is included in both columns. Because of this, adding the two columns "On Employee's Own Time" and "On Company Paid Time" would overstate the number of firms using a given program.

7. Training Related to Employee-Involvement Programs—In recent years, many companies have begun to involve employees in a more participative management style covering a broad spectrum of activities ranging from information-sharing programs at a low level of involvement to self-managed work teams at the highest level of involvement. The following questions concern the relationship between training and employee involvement.

	Number	Percent
a. What proportion of your industrial processes is performed by employees participating in worker involvement programs?		
0 - 24.9%	28	38.9
25 - 49.9%	25	34.7
50 - 74.9%	13	18.1
75 - 100%	6	8.3
b. If your workers participate in employee involvement programs, do they receive training specifically directed toward the activities they are performing in those programs?		
Yes, for all employee involvement programs	24	34.3
Yes, for some employee involvement programs	45	64.3
No	1	1.4

c. Below are a number of types of employee involvement on a continuum from low intensity involvement techniques on the left to high intensity involvement techniques on the right. Please circle the number of the continuum that describes approximately your company's **overall** level of employee involvement.

Spectrum of Employee Involvement*
Number of Respondents Selecting a Given Level

0	1	12	3	31	17	3
Information Feedback	Survey	Task Forces	Quality Circles	Other Problem Solving Teams	Work Teams	Self-Managed Work Teams

* Two respondents selected a mix of Employee Involvement levels.

Additional Comments

The following are some additional comments volunteered by the respondents:

The training and development function was created in 1990 and has been growing ever since. This function will continue to be vital as we move toward ISO 9002[1] and continuous improvement efforts.

* * *

We spend a considerable amount of money on training as well as supporting education. It would be an absolute mistake to mandate an amount that every company must spend—needs vary too much from area to area, even within a company.

* * *

Training is critical on an ongoing basis. Teaching the fundamental skills (reading and math) plus the technically specific skill is critical. We believe in partnering with technical schools, trade organizations, and unions (where they exist) to develop and deliver required training.

* * *

We are moving away from training programs toward task-based training that is instituted as required. In this way the training efforts become more focused on the individual.

* * *

The State of Illinois, through the Department of Commerce and Community Affairs, has provided financial assistance to our company on several occasions. Most recently, two of our customers received funding to provide training and development programs for their suppliers. These are world-class companies who, as they work with their supply chain, have had a positive influence on stimulating continuous improvement in companies throughout the state. This arrangement greatly enhanced our training and development capabilities. It would be beneficial for Secretary of Labor Reich to consider encouraging the development of this model.

* * *

Employees receive training as systems change. Every location has some type of process action team which receives various forms of skills, problem solving and team orientation type training. Training is ongoing as products and business conditions change. All new hires receive several weeks of training. This is a major cost for the company which is necessary in business today.

* * *

All training must be geared toward identifiable needs. These needs must be linked to the overall company vision and business plan.

* * *

We do a lot of training and employee development utilizing the talents and skills of employees to teach specific skills to others in their work area. We also are starting to redesign work systems that integrate the learning of knowledge and skills as people perform their work. These approaches, because they are integrated into the work itself, are impossible to accurately account for in hours or dollars, but are highly effective.

* * *

The workplace is undergoing fundamental change. Training is becoming less important and education is becoming more important. Communication, problem solving, cooperation skills, and team interaction skills will be required for more positions in the near future.

* * *

Training and development are a priority for our company and should be for all manufacturing. The commitment to learning started with top management and continues throughout the organization. This commitment has not been reduced during tough economic and business times.

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[1]The ISO series of quality standards is designed for use in contractual relations between supplier and customer. ISO 9002 applies to a supplier whose operations include production and installation.